Exercises on confidence intervals

1. We have a sample of observations

$$
\begin{array}{cccc}
28 & 26 & 8 & 19 \\
20 & 16 & 21 & 12 \\
8 & 12 & 12 & 13 \\
11 & 11 & 11 & 18 \\
23 & 16 & 20 & 20
\end{array}
$$

   (a) Construct a 95% confidence interval of the population mean μ.

   (b) Construct a 95% confidence interval of the standard deviation σ.

2. We have samples from two populations,

$$
\begin{array}{cccc}
13 & 9 & 12 & 11 \\
11 & 9 & 9 & 7 \\
10 & 11 & 9 & 9 \\
13 & 7 & 12 & 8 \\
11 & 7 & 10 & 10
\end{array}
\quad\text{and}\quad
\begin{array}{cccc}
13 & 14 & 11 & 11 \\
10 & 11 & 11 & 13 \\
8 & 10 & 12 & 11 \\
14 & 11 & 11 & 9 \\
15 & 18 & 12 & 10
\end{array}
$$

Calculate a confidence interval of $\frac{\sigma_1}{\sigma_2}$ for the two samples.